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PPG INDUSTRIES INC  
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PITTSBURGH, PA 15272

EXAMINER
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LIGHTFOOT, ELENA TSOY

ART UNIT	PAPER NUMBER
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1792

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04/01/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



***Response to Amendment***

Amendment filed on February 17, 2009 has been entered. Claims 16 and 19 have been cancelled. Claims 1, 2, 4-15, 17, 18, 20-23, and 25-35 are pending in the application. Claims 2, 5, 7-10, 21-23, 25, 26, 28-29, and 30 are withdrawn from consideration as directed to a non-elected invention.

***Claim Objections***

1. Claim 20 is objected to because of the following informalities: status identifier (withdrawn) should be changed to (original). Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Rejection of claim 15 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement has been withdrawn due to amendment.
4. Claim 15 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for 1500-4000<sup>0</sup>C, does not reasonably provide enablement for unlimited temperature of greater than 1500<sup>0</sup>C, e.g. 1,000,000 <sup>0</sup>C or more. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.
5. Claims 1, 4, 6, 11-20, 27, and 31-35 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The high temperature processing conducted at temperatures greater than 1500.degree. C., preferably 2500.degree. C., more preferably greater

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than 3000.degree. C., and most preferably greater than 4000.degree. C critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). The Applicants' specification discloses that metal precursors including claimed metal carboxylate are processed at high temperatures of **greater than 1500 °C** to form the product nano-dispersed powder provided by e.g. plasma, combustion, pyrolysis, electrical arcing in an appropriate reactor (See P88-89).

6. Rejection of claims 1, 4, 6, 11-15, 17-20, 27, 31 and 32 under 35 U.S.C. 112, first paragraph, as to the absence of recitation of **carrier particles** in claim 1 has been withdrawn due to amendment.

7. Rejection of claims 1, 4, 6, 11-15, 17-20, 27, 31 and 32 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement due to the absence of recitation of **carrier particles**.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1, 4, 6, 11-20, 27, and 31-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "high" in claim 1 is a relative term which renders the claim indefinite. The term "high" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Thus, the term "high temperature" recited in claim 1 which renders the claim indefinite.

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***Examiner Note***

(A) The current Application is DIV of 10/004,387 and CIP of 5 parent applications. The current Application contains a limitation “greater than 2500<sup>0</sup>C” in Claim 1 and “greater than 3000<sup>0</sup>C” in Claim 15. This limitation was added *first* time to the Divisional Application 10/004,387 (now Patent 6,652,967). Therefore, the current Application is entitled to priority data of the Divisional Application ‘387, which is 8/8/2001 (not to filing date of earliest parent application 08/707,341).

(B) The term “**simple oxides**” was interpreted according to the Applicants’ specification as metal oxides such as aluminum oxide, silicon oxide, zirconium oxide, cerium oxide, yttrium oxide, bismuth oxide, titanium oxide, iron oxide, nickel oxide, zinc oxide, molybdenum oxide, manganese oxide, magnesium oxide, calcium oxide, and tin oxide.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 4, 6, 11-15, 17, 18, 20, 27 and 31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umeya et al (US 5,489,449) in view of Bickmore et al (US 5,984,997).

The cited prior art is applied here for the same reasons as set forth in paragraph 14 of the Office Action mailed on 11/18/2008 since claim 1 incorporates limitations of cancelled claim 16, and new claim 33 recites limitations of non-amended claim 1.

Umeya et al fails to teach the step of "preparing a mixture of one or more metal-containing precursors and carrier particles to create a slurry precursor" and then "feeding the slurry precursor to a reaction zone of a high temperature reactor thereby creating a vapor of the slurry precursor" as recited in amended independent claim 1.

However, it is held that selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See also *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). It is also held that selection of any order of mixing ingredients is *prima facie* obvious. *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930).

Therefore, process steps of Umeya et al comprising mixing three ingredients: (1) ultrafines, (2) core particles and (3) a stream of fluidizing gas in an order: (1) +(3), then adding (2), i.e. mixing ultrafines with a gas stream, then mixing core particles with the resulting mixture, would be obvious over another order of adding components: (1) + (2), then adding (3), namely mixing ultrafines with the core particles and then adding the mixture into the stream, in the absence of showing of criticality.

As to claim 34, Umeya et al teaches that the *core* materials are composed of the inorganic non-metallic or metallic materials which include all inorganic materials known as refractory or **ceramics**, for example, **oxides** such as Al.sub.2 O.sub.3, ZrO.sub.2, SiO.sub.2, BeO, MgO, CaO; **nitrides** such as Si.sub.3 N.sub.4, AlN, BN; **carbides** such as SiC, WC; borides such as BP, BN; clay and minerals such as kaolin, montmorillonite, bentonite, vermiculite; magnetic materials including various ferrites (See column 2, lines 36-49).

As to claim 35, Umeya et al teaches the **ultrafines** of the coating material having an average particle size in the range of 0.005  $\mu\text{m}$  to 0.5  $\mu\text{m}$  (See column 2, lines 66-67) are strongly

**deposited** on core particles (See column 2, lines 23-35) having an average particle size in the range of 1  $\mu\text{m}$  to 10  $\mu\text{m}$  (See column 2, lines 49-52).

13. Claims 1, 4, 6, 11-15, 17, 18, 20, 27 and 31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bickmore et al in view of Umeya et al for the reasons of record set forth in paragraph 15 of the Office Action mailed on 11/18/2008.

14. Claims 1, 4, 6, 11-15, 17, 18, 20, 27 and 31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konig et al in view of Holzl, further in view of Umeya et al for the reasons of record set forth in paragraph 16 of the Office Action mailed on 11/18/2008.

15. Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konig et al in view of Holzl, further in view of Umeya et al, as applied above, and further in view of Bickmore et al for the reasons of record set forth in paragraph 17 of the Office Action mailed on 11/18/2008.

### ***Response to Arguments***

Applicants' arguments filed February 17, 2009 have been fully considered but they are not persuasive.

### **35 U.S.C. § 112, 1st paragraph**

The Examiner alleges that the specification "while enabling for 1500-4000° C, does not reasonably provide enablement for unlimited temperature of greater than 600° C, e.g., 1,000,000° C or more." Applicants traverse this rejection at least because paragraph [0062] of the specification as originally filed provides various embodiments wherein processing is conducted at temperatures of "greater than 1500° C, preferably 25000 C, more preferably greater than 3000° C, and most preferably greater than 4000° C..." (emphasis added). Applicants remind the Examiner that claims should be given their broadest reasonable interpretation (MPEP 2111). The specification at paragraph [0062] clearly provides enablement for temperatures "greater than 4000° C." Therefore, the Examiner has arbitrarily concluded that the specification is only enabling for temperatures between "1500-4000° C." Moreover, the upper most limit for heating is obviously bound by what can realistically be achieved. Therefore, the Examiner's assertion that the Applicants' claims encompass a temperature of 1,000,000° C is an unreasonable interpretation of the claims. For at least these reasons, this rejection should be withdrawn.

The argument is unconvincing because the Applicants' specification does not show the upper most limit for heating is obviously bound by what can realistically be achieved, and, thus, the scope of claimed invention is uncertain.

**Rejection under 35 U.S.C. § 103(a)**

**Umeya in view of Bickmore/Bickmore in view of Umeya.**

Applicants assert that neither the combination of Umeya and Bickmore nor the combination of Bickmore and Umeya teach or fairly suggest the step of "preparing a mixture of one or more metal-containing precursors and carrier particles to create a slurry precursor" and then "feeding the slurry precursor to a reaction zone of a high temperature reactor thereby creating a vapor of the slurry precursor" as recited in amended independent claim 1. Thus, this combination of references fails to disclose or suggest each and every element of amended independent claim 1 and fails to render Applicants' claimed invention obvious.

The Examiner respectfully disagrees with this argument for the reasons discussed above.

**Konig et al in view of Holzl, further in view of Umeya et al**

Applicants assert that amended independent claim 1 does not recite either "combustion processing" or processing at "greater than 25000 C" as asserted by the Examiner. Thus, the Examiner is reading limitations into independent claim 1 that are not there. The Examiner is reminded that it is impermissible to import subject matter from the specification into the claim (see MPEP 2111). Additionally, while the Examiner purportedly rejected independent claim 1 "further in view of Umeya et al." (Office Action, pg. 12 at #16) the Examiner has failed to provide a basis for the assertion of Umeya in the rejection. For at least these reasons, the Examiner's rejection of independent claim 1 over König in view of Holzl further in view of Umeya has been made improperly and should be withdrawn.

The Examiner respectfully disagrees with this argument. The Examiner rejected claim 1 under 112, 1<sup>st</sup> paragraph as omitting critical element of the process, namely, thermal decomposition of metal-containing precursors. Although Holzl was redundant for the rejection, Holzl did not teach away from thermal decomposition process of claim 1.

As to Umeya et al, in contrast to Applicants argument, the Examiner clearly showed that Umeya et al was cited to remedy König in not showing the addition of the carrier particles.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy Lightfoot whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Friday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Elena Tsoy Lightfoot, Ph.D.

Primary Examiner

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April 1, 2009

/Elena Tsoy Lightfoot/